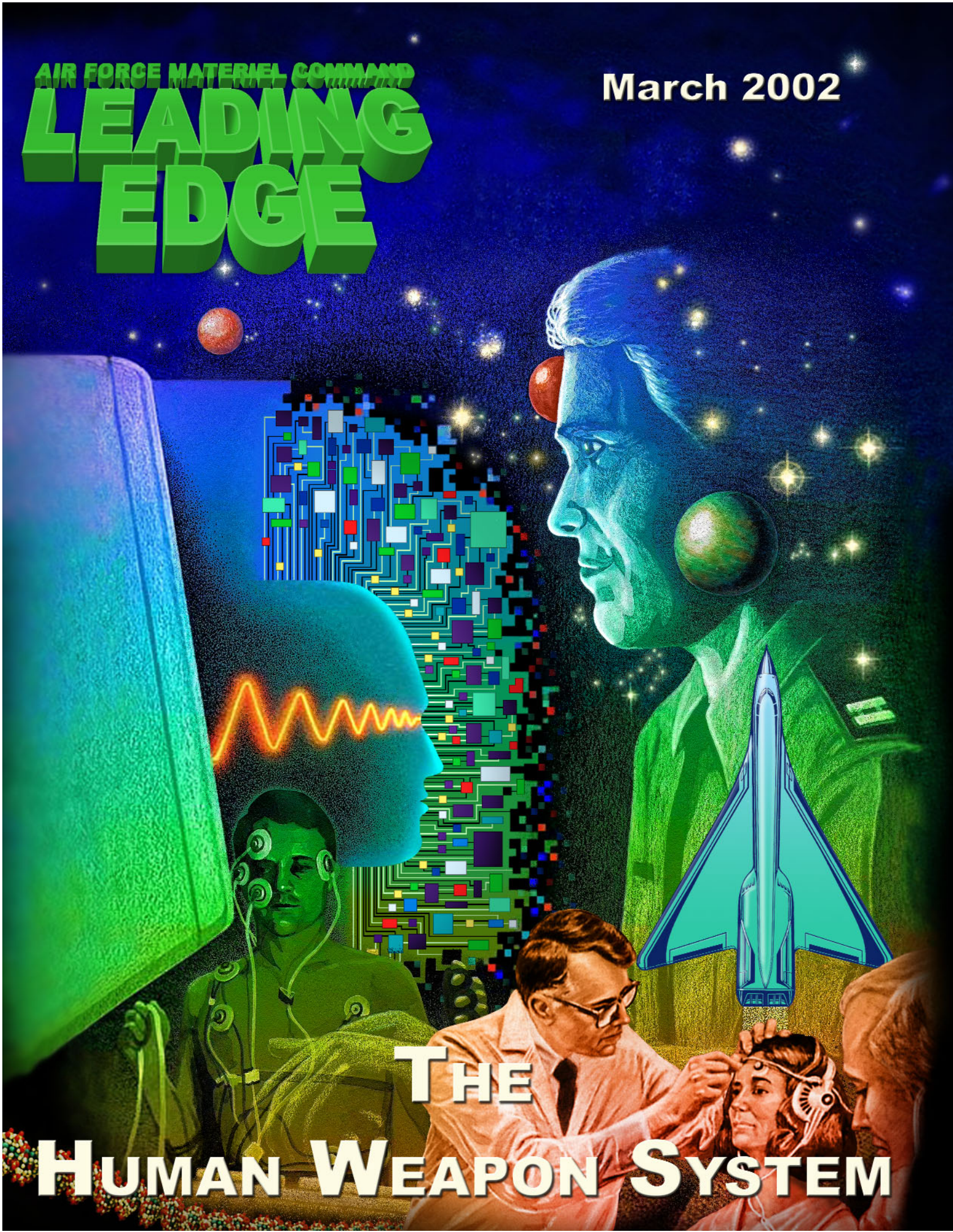
AIR FORCE MATERIEL COMMAND

LEADING EDGE

March 2002



THE HUMAN WEAPON SYSTEM

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LEADING EDGE

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AFMC
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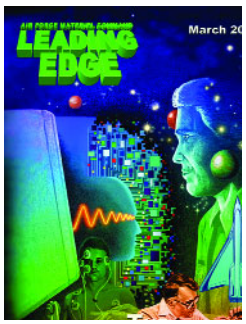
Cover Stories



Cover design by Mr. Euguene Layman, Air Force Institute of Technology. Mr. Lehman is an artist/illustrator/designer who creates on everything from logos to murals.

4 - 17 The human weapon system

The human weapon system is a relatively new term reflecting a shift in focus for the Air Force medical service. Turn the page to see a few of the ways AFMC is striving to improve the effectiveness of today's warfighters.

Mission Progress

Features

Departments

Ms. Deborah Stapleton, Brooks AFB, Texas, adopted this baby white-tailed dove when she found it in the parking lot at work. Turn to page 26 to read how she learned "parenting skills" that allowed her to successfully nurture her tiny charge.

Stealth missile 'go ahead' for low rate production

EGLIN AIR FORCE BASE, Fla. — The military's newest stealth cruise missile, developed here, is now one step closer to being delivered to warfighters.

Undersecretary of Defense Pete Aldridge recently gave the joint air-to-surface standoff missile program the go-ahead for low-rate initial production, giving the Air Force combat capability on F-16 Fighting Falcons and B-52 Stratofortresses by 2003.

JASSM is the first cruise missile development and acquisition program conducted at Eglin; it's a joint Air Force and Navy initiative. The missile is developed and produced by Lockheed-Martin Integrated Systems.

JASSM employs stealth to penetrate enemy air defenses at ranges of more than 200 miles and a global positioning system coupled with a terminal seeker to precisely attack high-value targets. Unlike current missiles, JASSM will be configured for most types of aircraft. The 2,000-pound weapon is planned for deployment on the B-1B Lancer, B-2 Spirit, B-52, F-16, and the Navy's F/A-18 E/F Hornet.

Air Force officials said the service plans to make the decision for full-rate production in late 2003.

— Information provided by AAC Public Affairs

AFRL awards $22.9 million AMSTE research contract

ROME, N.Y. — The Air Force Research Laboratory Information Directorate has awarded a contract to Northrop Grumman Systems Corp. of Melbourne, Fla., for development, integration and demonstration of system technologies required for precision engagement of moving surface threats from long range.

The one-year contract is funded by the Defense Advanced Research Projects Agency of Arlington, Va., as part of its affordable moving surface target engagement program.

The directorate is serving as agent for the DARPA program, designed to investigate and develop technologies to affordably engage moving surface targets such as tanks, tactical ballistic missile transporters and small boats.

Moving ground targets pose a significant challenge to current weapon systems because of the dynamics involved. Idle vehicles can accelerate to speeds of 60 miles per hour in less than 10 seconds — and stop in shorter periods of time.

While typical military vehicles do not tend to accelerate or stop that fast, they still pose a significant challenge to maintaining accurate tracks. Vehicles also tend to mix with other vehicles, travel within groups or convoys, start and stop often, and use terrain to block their detection.

— Information provided by AFRL Public Affairs

'Old meets new' when NKC-135 refuels Raptor

EDWARDS AIR FORCE BASE, Calif. — Staff Sgt. Pat Denson, 418th Flight Test Squadron boom operator here, prepares to refuel Raptor 4002 on a test support mission in an NKC-135E tanker over Edwards recently.

The tanker is one of two NKC-135s used for refueling test support missions by the 370th Flight Test Squadron, an associate reserve unit.

— Information provided by AFFTC Public Affairs (USAF photo by Master Sgt. Anne Ward, AFFTC Public Affairs)

ESC office adds AWACS e-mail capability

HANSCOM AIR FORCE BASE, Ma. — The Airborne Warning and Control System Program Office here responded rapidly to urgent customer needs by providing high-frequency email capability to a portion of the AWACS fleet involved in homeland defense in less than three months time.

The delivery of six briefcase-sized units in December came nearly a year ahead of the planned schedule.

The 552nd Air Control Wing out of Tinker AFB, Okla., which operates the U.S. AWACS fleet, requested the systems for use in "real-world" contingency operations, both overseas and at home, in response to the incidents of Sept. 11.

The systems, which are produced by contractor Rockwell Collins, permit secure data transfer between the command center located at Tinker and the E-3s via e-mail transmission rather than voice. This is the first application of high frequency email messaging, said Mr. Tony DeJoy, technical lead on the project.

The small amount of space taken up by the briefcase on the plane is an advantage because space aboard an AWACS E-3 is always at a premium. And it's user friendly since it uses Microsoft Office and Outlook programs most people are already familiar with.

It provides data transfer capability at high speeds, provides air-to-air and air-to-ground connectivity capability, and it can be used to transfer classified and unclassified data. In the long term, the program office plans to pruchase 32 airborne kits, one for each E-3 in the Air Force fleet, plus spares.

— Information provided by ESC Public Affairs

— Col. George Seignious IV
AFMC Command Surgeon

This month's *Leading Edge* addresses "The Human Weapon System," a term that may be unfamiliar to many and is relatively new even to medics. It reflects a shift in focus and direction of the Air Force medical service.

We are proud to introduce you to this term and to a few things our Air Force Materiel Command medics are doing to improve effectiveness of the human as a weapon system.

Only the best

Our Air Force is blessed with the finest weapons on earth. With these, our members are able to skillfully execute an air battle, assured of reliability, accuracy and safety. This has come about as a direct result of the skill of AFMC members in systems acquisition.

When acquiring or developing a system, we must account for all aspects of that system's life cycle. Every step from developing, testing, refining, training, employing and eventual disposal must be planned and executed with skill. This degree of foresight enables us to provide our warriors reliable systems and effective training.

The common denominator in each of these systems is the human component. Errors and faults, when they occur, are often attributable to the operator and frequently, the limiting factor in our ability to fight effectively in combat is the human within the weapon. Until recently, we simply accepted this. The human was regarded merely as the user or occupant of a system — not as a unique weapon system themselves. No longer.

The ultimate weapon system

We no longer use the power of numbers alone in executing a battle. We do not send thousands of bombers over a target with full knowledge that many will not return. Now we rely on singular warriors in aircraft to do the work. Everything must be perfect. Every pilot, maintainer, scheduler, controller and others must be at the top of their game or the mission will fail. These individuals have now become a weapon system.

Thus, the warrior could be considered the ultimate off-the-shelf system — carefully selected, expertly trained and fine-tuned for maximum effectiveness. We must have a well-executed maintenance plan to ensure long life and continued performance.

Hospitals and clinics are our "maintenance facilities" — what most people associate with medics, but there is much more to our support of the human weapon system than care during illness or injury.

Air Force medical warriors are engaged in precisely tuned research into vision, cardiology and more to select the finest warriors and give all Air Force members an improved fighting edge. By reworking the preventive maintenance aspect of our medical service to ensure that every member receives the best clinical preventive care — on time and on target — so our commanders can rest assured their warriors will be ready when needed.

Our field medical capability has been redesigned to provide the best care available in the United States, on the front lines of combat, and our aeromedical evacuation capability has been enhanced to race critically ill or injured away from combat accompanied by our most skilled medics.

Developing new technologies

AFMC teams have developed new technologies that expand the envelope of human performance beyond that ever thought possible. Largely due to the heroic efforts of AFMC personnel such as those highlighted in this issue, every warrior is now a human weapon system.

I am proud to be your command surgeon and play a role in the revolution within the Air Force medical service. I can't say enough about the men and women who work so diligently in our medical treatment facilities, research institutes, academic institutions and on the line. Our folks set the standard in peacetime patient care, civil disaster response, research, medical readiness planning, deployments and wartime contingencies.

To remain on the cutting edge is a Herculean effort. By staying vigilant and dedicating our medical resources to keep our warriors ready to counter future threats, we will be successful when called upon.

Remember that each of you is a critical weapon in our fight against aggression, oppression and terror as you read about the accomplishments your AFMC colleagues have made in assisting you to become a more effective Human Weapon System.

Screenings strengthen deployment readiness

In October 1997, the Air Force implemented the preventive health assessment, or PHA, screening as a tool to assess the medical qualifications of active duty personnel for mobility. This process has dramatically reduced the number of personnel requiring mission-compromising evacuations due to pre-existing medical conditions. The result has been a more fit and ready force poised to accomplish our changing missions.

The health assessment refocused Air Force medical service efforts from inefficient practices, such as unneeded medical exams and their costs, to disease prevention. Our forces became more aware of how choices influence overall health and missions accomplished. Personnel are seeking healthier lifestyle habits.

The health assessment brought about changes in certain examinations based on age, gender and specific risk factors.

Preventive health appointments are scheduled annually by birth month, providing continuity of care for all active duty personnel, ensuring they are healthy and ready to deploy. Cholesterol levels as well as other screening exams for cancer are checked on active duty member every five years, beginning at age 20.

Readiness further enhanced

Still missing were some checks — immunization data, dental classifications, HIV status, DNA records and other readiness labs. The medical service met the challenge of greater emphasis on medical force protection by developing the new preventive health assessment and individual medical readiness tool, known as PIMR. An enhancement to the old assessment, it provides an up-to-date snapshot of an individuals' medical readiness, including PHA status, immunizations, dental class, fitness management results and occupational health exam information.

This new tool generates reports for commanders, informing them of current deployment medical readiness along with the names of members who lack requirements to qualify for deployment.

Commanders now know what actions are needed by squadron personnel to increase their medical force protection posture and fully support their unit's mission.

Medical service members from 75th Medical Operations Squadron assist active duty personnel during preventative health screening to strengthen individual medical readiness. (Photos by Tech. Sgt. Pedro Gonzales)

"The information on the squadron commander's missing items report gives a snapshot of where we are and where we need to go," said Tech. Sgt. John Colson, unit deployment manager, 75th Civil Engineering Group. "We save by not deploying members that may later require evacuation due to medical conditions."

A backup system

Unlike PHA, which is scheduled by birth month, PIMR is scheduled one year from the date of the last PHA appointment. All PIMR requirements can now be met year round, and as a safety net, annual preventive health assessment appointments ensure they are done.

What does this mean for you? The medical service and commanders will know at a moment's notice who is ready to deploy. This creates a valuable tool when planning personnel deployments and other temporary duties lasting more than thirty days.

Preventive individual medical readiness also changes what exams are done during appointments basing them on an individual's risk factors, with some exceptions.

In October 2002, an additional requirement will be added called medical equipment. The wearing of glasses or contacts will require new information such as do you have a second pair of glasses and do you have gas mask inserts? They will enter your actual eyewear prescription and whether you require the use of hearing aids or hearing protection.

You will have an adult prevention and chronic care flowsheet, or Defense Department Form 2766. This information is carried with you whenever you go on deployments, giving an attending provider a full understanding of your medical history without your complete medical record in hand.

Future refinements

Chief Master Sgt. (Retired) Dennis Hickey, population health support officer at Brooks AFB, Texas, said future plans include the ability to track deployed personnel, preventing scheduling personnel for medical visits who are currently deployed and unavailable. A module containing the mandatory pre-deployment and post-deployment questionnaires will also be included.

At Hill AFB, Utah, they utilize the PIMR and complete immunization tracking application databases on-site at the deployment processing unit. It is the final tool to ensure only qualified personnel deploy.

Missing immunizations become current and all other missing items are identified to the unit deployment managers for commander waivers for deployment. Other members cam be substituted with another member, at the commander's discretion. The new PIMR tool provides a previously unavailable level of tracking and scrutinizing of active duty members' medical force protection and deployment readiness postures. The Air Force medical service role in preparing fighting forces speaks of our need to help prepare the future of the United States Air Force.

— Tech. Sgt. Pedro Gonzales, 75th Medical Operations Squadron, Hill AFB, Utah.

Col. Dartanian "Doc" Warr, former director of the 311th Human Systems Program Office at Brooks AFB, Texas, developed a showcase presentation for "Circle of Life."

tection spectacles, protective gear, survival vests, ejection seats, chemical detectors, parachutes, life rafts and survival radios.

Besides the variety of Air Force equipment and systems that have their genesis within the SPO, Col. Warr's team also provides other services as well. Toward the end of the "Circle of Life" are the contributions of the SPO's aircraft investigation team, and the life sciences equipment lab who bring closure to families of those MIA's from Southeast Asia through analysis of artifacts recovered from crash sites. Lessons learned from these investigations brings renewal to the "Circle of Life" through modifications to equipment and systems that further enhance safety, performance and survivability.

"The Circle of Life" is portrayed through a step-by-step story in images and text outlining the contributions the SPO makes in supporting Air Force missions and requirements. The storyboard formed the basis for Col. Warr's showcase presentation and has evolved into a plethora of marketing tools ranging from posters and fliers to PowerPoint slides and computer screensavers.

Col. Warr premiered the "Circle of Life" in 2001. "It's helped revive our organization," he said with the enthusiasm of a Sunday morning preacher. To the many Air Force organizations that depend upon this "Circle of Life," it has come to symbolize warfighter sustainment and survival.

— Mr. Rudy Purificato, 311th HSW

System ensures casualties evacuated quickly, efficiently

With the help of a newly fielded automated information system, evacuating military casualties from the battlefield and transporting them quickly and efficiently to the nearest medical facility has taken a giant step into the information technology age of the 21st century.

The USTRANSCOM Regulating And Command and Control Evacuation System, known as TRAC2ES, supports a full spectrum of operational scenarios - from day-to-day peacetime operations to major conflicts and natural disasters, said Lt. Col. Keith Loree, TRAC2ES Program Manager at the 311th Human Systems Program Office, Brooks Air Force Base, Texas.

The web-based system combines previously separate functions for airlift and medical regulation and was initiated by the U.S. Transportation Command as a lesson learned following the Gulf War, Lt. Col. Loree said.

"The response from users has been awesome," 2nd Lt. Tim Schofield, Deputy Program Manager for Integration said. "The system is actively supporting Operation Enduring Freedom and everybody and their brother wants access to it, because of the new capabilities it provides the warfighter.

"TRAC2ES is a mission essential decision support tool that combines reengineering of business processes and automated information system solutions," said the program manager who now helps sustain the worldwide system. "It integrates patient needs, transportation, logistics, and clinical information to develop the most efficient plan to move patients to receive the care they need. The system looks at a variety of factors that influence the decision-making process and can rapidly plan the evacuation of more than 1000 patients in less than 30 minutes."

The system is designed to operate the same in peacetime as in war to enhance readiness and provide worldwide management and control to the Defense Department's patient and casualty evacuation requirements, Lt Col Loree said.

The warfighter's primary access to TRAC2ES is via a web-based interface. A medical clerk, using any military desktop computer can input a patient movement request over the World Wide Web. For areas where dedicated web access is unavailable, TRAC2ES has an e-mail-like application called "TRAC2ES-Mobile" that enables a user to work offline then connect to a network, submit information and disconnect again, the lieutenant pointed out.

"This is a mission essential program that gives us incredible new capabilities. The planning cycle for evacuations is now performed automatically in minutes instead of the hours it previously took to manually sketch it out on a grease board," Lt Col Loree said. He said one of the greatest benefits of TRAC2ES is the ability to provide in-transit visibility on patients. Within 5 minutes, TRAC2ES can report the last known location of a patient while they are in the evacuation process, he said. This allows commanders and medical personnel to track the latest status of a patient.

Once patient movement request information is input into the system, the TRAC2ES application known as the "Lift-Bed Planner" considers all of the requests submitted, all of the missions capable of carrying patients that are available, the number of beds at various hospitals around the world, and then determines which patient will fly on which mission to which destination.

TRAC2ES became operational in July and in the short time it's been operational, it's been called on repeatedly to support a number of high profile cases, Lt. Schofield said. In August TRAC2ES was used to plan the life-saving evacuation mission of an injured Chinese sailor who fell 19 feet to the ship's deck at Christmas Atoll in the Pacific.

"When TRAC2ES is needed, America's fighting men and women will quickly have a plan for the most efficient route to safety and medical care," said Lt. Schofield.

— Compiled from 311th HSW reports

AFRL biological research provides new tools

DNA sequence assuring health, safety of

— Ms. Sara Veth
AFRL Human Effectivness Directorate

What does the sequence of your genes mean to you? It may not mean much now, but knowing the DNA sequence of each human being is sure to change the world.

It is anticipated that knowing an individual's DNA sequence will affect everything from a routine doctor visit to the identification card you carry, and the potential applications are unlimited.

Hot topic

The human genome project, the project to map DNA sequence of a human being, is one aspect of biotechnology — a "hot topic" lately, with daily news releases covering everything from anthrax detection to stem cell research.

Especially since the tragedy of September 11, 2001, Americans have become much more interested in recent advances in biotechnology. The sequencing of the human genome was a monumental project in biotechnology that relied heavily on advances in computer storage and network capabilities. The human genome project has led to a revolution in biological research providing the U.S. Air Force with new research tools.

The operational toxicology branch of the Air Force Research Laboratory Human Effectiveness Directorate, or HEST, uses many of the latest technologies and developments in biotechnology everyday to find new ways to protect and sustain our warfighter.

The directorate is charged with the mission of identifying and characterizing hazards associated with complex chemicals in a timely and cost effective manner to assure the health and safety of our warfighters.

In order to carry out this mission, the research teams at the directorate are utilizing some of the same tools developed for the human genome project to solve challenging problems in toxicology, which is the study of the effects of toxic chemicals.

New field of study

Genomics research is based on knowledge of the DNA sequence of an organism. The combination of genomics and toxicology has given rise to an entirely new field of science, toxicogenomics.

Researchers at the directorate are using toxicogenomics to assign toxicity "fingerprints" to chemicals that are used regularly in the military, but have not been fully characterized previously. A toxicity fingerprint is one way to visualize a cell's reaction to chemical exposure.

When a cell is exposed to a toxic chemical, many systems are activated or deactivated in order to remove the chemical, break it down, repair damage caused by the chemical or adjust to the exposure in other ways. One of the initial steps in many of these pathways is called gene expression.

A gene is expressed when a mechanism within a cell is activated and copies of that gene are produced.

In order to determine how a chemical affects a cell, cells are exposed to a toxic chemical in the laboratory, the ribonucleic acid is taken out of these cells, and after several chemical manipulations, the number of copies of a gene produced by those cells can be measured using a gene chip.

Unique fingerprint

The pattern of genes that is expressed following exposure to a toxic chemical is different for each chemical and probably for each cell type. As shown in the photo on the next page, the pattern of gene expression can be visualized using fluorescent dyes. The "fingerprint" may even be unique, like our own DNA.

If one knows what genes are expressed, one can understand at least part of the pathway involved in the toxicity of each chemical.

Toxicogenomics gives important clues that will one day explain exactly how cells work on a molecular level. The information obtained from these studies may also be used to determine an exposure limit to prevent cellular damage.

50 years of study

Toxicology research has been carried out at the directorate since the 1950s. In the 1950s - 1970s toxicology research focused on the reaction of the whole animal to a toxic chemical. Biochemical assays and physiology were examined in

Researchers at the Air Force Research Laboratory Operational Toxicology Branch are using the latest technologies in biotechnology to find new ways to sustain warfighters. On the left, Dr. Jeff Gearhart and Dr. Peter Robinson discuss a mathematical toxicity model. (AFRL photo)

f warfighters

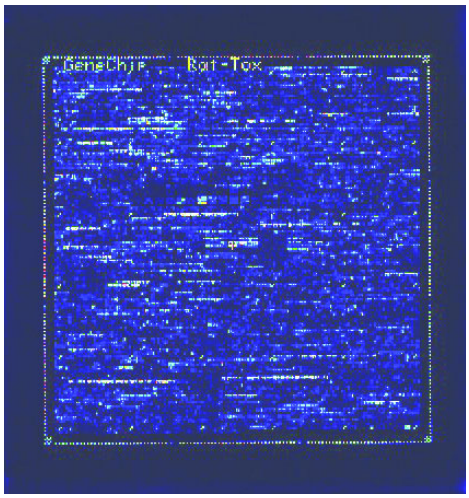
order to determine how a chemical affected the whole animal.

In the 1980s - 1990s, researchers began to work more in test tubes than in whole animals. Advances in biotechnology allowed them to work with a few proteins and a few genes at a time.

Today, researchers work with cell lines as well as animals and are able to examine thousands of proteins and genes at once. Researchers are attempting to create maps of complex pathways that allow cells and animals to function, heal, survive and thrive. The directorate is taking this approach with many chemicals used only by the military. It is important to understand the toxicity of chemicals in order to protect personnel, the environment, and to reduce the overall weapons lifecycle cost.

Leading the way

HEST is developing leading edge biotechnology approaches to toxicology, assuring we remain ahead of the power curve in assuring our weapons systems and deployed environments do not threaten the health of our airmen.



Above is an example of a "gene chip." Liver cells were exposed to a chemical and RNA was taken out, manipulated and analyzed. The expression level, or amount of RNA produced by those cells, was measured and compared to levels for the same genes in untreated cells using a Gene Chip. Colors represent the number of copies of specific genes present in the sample. Black represents low RNA levels, blue, green, yellow and red represent increasing amounts of RNA, with red the highest level. The data is analyzed numerically and used to make a "toxicity fingerprint" for various chemicals.

Oral health strengthens Air Force readiness

Our military's job is to defend our country anywhere, anytime. Weapon systems and aircraft must be ready to go meet these challenges, as having these resources unavailable when called upon to do their job is not an option.

Likewise, our most valuable resource, the "human weapon system," must be ready to accompany the equipment, and maintaining proper oral health is a key component in ensuring our military force is physically fit.

That's where the Air Force Dental Corps comes into play — making sure military members are dentally qualified prior to deployment.

It's more important than ever

During this time of increased deployments to remote areas of the world, it is more important than ever that our armed forces be in good health. The goal of the dental clinic is to keep 95 percent of active duty personnel ready to deploy at any time.

The consequences of deploying to a geographically isolated area without obtaining a dental clearance can be serious, both for the individual and their unit. If a dental emergency arises causing one person to be unable to perform their assigned duty, the mission suffers.

The good news is that most dental-related emergencies are preventable and can be avoided simply by visiting your dentist. A periodic dental examination program exists to provide regular dental examinations for active duty personnel.

Do it today, don't delay

During the dental examination diseases are identified in their earliest stages so treatment can be rendered before they become a bigger problem. The longer treatment is delayed, the more intensive and lengthy the treatment becomes.

In addition, by not showing up for dental appointments the member is not only hurting himself, but is hurting the mission by wasting appointment time that could be used to get somebody else dentally qualified. Administrative action can be taken for chronic broken appointments — dental appointments are considered mandatory military formations.

Most people are faced with some degree of either tooth decay or gum disease sometime during their lifetime. Both are highly preventable conditions and with proper care can be eliminated.

The dental clinic's role is to ensure readiness through diagnosis and treatment while helping maintain dental health and prevention of disease through fluoride treatments, oral hygiene instructions and professional cleaning.

Prevention is the key

Everyone is susceptible to tooth decay, but we can take certain steps to help reduce the chances of getting cavities. Avoid sipping sweetened beverages all day, which creates conditions favorable for decay, cut down on snacks between meals and brush and floss regularly.

And remember to pack a toothbrush, toothpaste and dental floss when going on deployment.

It is recommended that teeth be brushed at least twice a day, especially before going to bed, to eliminate any plaque deposits on the teeth. Dental floss should be used to clean between the teeth, an area where the toothbrush bristles cannot reach and many cavities form.

It is important to remember that individuals are responsible for their own oral health. Proper home care in conjunction with regular dental checkups is the best way to prevent dental problems.

— Capt. Shawn Powell Capt, USAF Dental Clinic

Mr. Jerry Wright, chief of logistics at Tinker AFB, Okla., finishes a lunch hour routine with time on a stair stepper at the Fitness Center West, one of four gyms at Tinker. (Photo by Ms. Margo Wright, OC-ALC Public Affairs)

Wings or not, you're in charge of maintaining the most valuable Air Force weapon system

— 1st Lt. Stacy Benedict
AFFTC Aerospace Physiology Flight Commander

To keep America's combat planes flying year after year, technicians analyze stress and wear, then perform detailed maintenance to hone aircraft systems to razor-sharp perfection and accomplish the mission with ultimate confidence.

Every Air Force service member is a weapon system too, a "human weapon system," a highly flexible tool, able to be honed and deployed in a number of ways. It's important to remember that the human body is susceptible to simple, everyday threats that, if left unchecked, can contribute to costly losses in lives, military aircraft and other equipment.

Operations tempo, self-imposed stresses, mission-related threats, and other factors can collectively lead to decreased performance or result in on-the-job errors, communications breakdown or mishaps.

Food is the fuel

A chain of negative events usually leads up to a climactic event, with each link as a minor issue that can be overcome. Yet each additional link can increase stress, cause distraction or reduce situational awareness. Individuals may have trouble sleeping, their attention may wander, and they may make poor decisions or mis-prioritize tasks.

One possible deployment scenario: you may be sent to a remote desert location, where it is easy to neglect proper hydration. On top of being separated from friends and family, you may face marital or financial problems back home.

Your rotating shift doesn't allow time to eat properly, and you drink a lot of caffeine to stay awake. You smoke sometimes and don't always find time for regular exercise.

At times like these, we tend to overlook basic human needs, which can lead directly to mission-related problems or mishaps.

The human weapon system requires proper maintenance to function at high efficiency levels — how well do you take care of yourself?

Dehydration: dangerous

Hydration is important whether the region you are deployed to is hot or cold, the weather wet or dry. Failure to properly hydrate can lead to serious impacts on the body including the common symptoms of discomfort — weariness, sleepiness, headache, vomiting and dizziness.

If you don't hydrate while exercising, you can quickly find yourself dehydrated — aerobic activity decreases hydration by 20 percent, while anaerobic activity decreases it a further 35 percent.

Missed meals, intentional or unintentional, can lead to low blood sugar, also known as hypoglycemia. Although the highly versatile human weapon system continues to function, running while low on "fuel" tends to make the system less effective, and can jeopardize the mission.

Individuals experiencing hypoglycemia may feel weak, shaky, distracted or hungry.

Late night activities, sleeping late on weekends and rotating

shift work can disrupt your daily rhythmic activity cycle, or your circadian rhythm, which should include at least eight hours of sleep each night.

To recover from a disrupted cycle, the body needs two to four days that include proper sleep.

The body tracks sleep quantity and quality — therefore, when sleep is inadequate, the body will handle the problem automatically, starting with drowsiness followed quickly by decreased awareness and performance. Performance levels after remaining awake for 24 plus hours equate to driving while intoxicated.

Fatigue – drains effectiveness

There are several stages and signs of fatigue: acute fatigue, which is generated from physical exertion, chronic fatigue, from repeated sleep loss day after day, and subjective fatigue, generated by self-imposed or mission-related stress.

Weekend activities, daily sleep habits, caffeine intake, medication, alcohol, and tobacco use can all lead to fatigue.

Signs include accepting lower standards, lack of patience, increased forgetfulness, reduced situational awareness, slower reaction time and daydreaming.

Beat the heat

Even a one-degree change in body temperature can affect physical and mental performance, degrading dexterity and fine motor skills in cold climates, and lethargy or lackadaisical attitude in hot conditions.

The cold in itself is an inherent distraction and if inadequately dressed for cold climates, mental judgement and decision-making are impacted with increased potential for frostbite and hypothermia.

Working in high heat climates may make you feel drained of energy and strength, in which it is difficult to focus on simple tasks, with increased potential for heat exhaustion and heatstroke.

Preventing stress

There is a fine line between increased productivity from stress and a rapid deterioration in performance. Experts have found that individuals under significant stress experience decreased self-confidence and generally take on a negative outlook or act in ways that are not typical for them.

Certain people may start taking more risks than they normally would and others may become withdrawn and isolated.

Stress decreases the ability to keep situational awareness, process information, make proper decisions and realistically critique self-performance.

This tends to generate focused attention on one or two minor tasks at hand, which sometimes results in a skewed view of the "big picture."

Maintaining a healthy lifestyle, including adequate sleep and proper diet, coupled with keeping physically fit, will allow personnel to better handle stress as well as fatigue.

Vigilance a must

Mistakes, by definition, are not intentional, so why do things go wrong?

Not every mishap may be chalked up to poor training, improper procedures, or an individual "screw up."

The fact is dehydration, hunger, fatigue, environmental impact and stress compound one another and can lead to serious mishaps — yet they are factors that we should consider common everyday problems to be faced and overcome.

When these factors affect us, we may not even be aware of the danger they represent — leaders serving at all levels need to be vigilant and aware of the subtle changes in our coworkers. They may point to something much more serious.

This is not a philosophical issue: it is real and affects our troops every day. By giving ourselves the care we deserve, we take that long list of adverse effects and minimize the potential damage.

America's combat aircraft require great care and attention to detail to perform confidently and accurately. The human weapon system, each of us, require no less.

Senior Airman Rana Jacobs, National Air Intelligence Center, Wright Patterson AFB, Ohio, keeps hydrated while working out on base. (Photo by Ms. Estella Holmes, AFMC Public Affairs)

Warfighter capabilities enhanced by laser surgery

During the 1996 Khobar Towers terrorist attack Tech. Sgt. Ronald Neldon was knocked to the floor, his world exploding around him as he rested in bed. Unable to find his glasses, he could barely see. With the power knocked out, he frantically scrambled around in the darkness until he found his glasses and then sprung into action ready to assist others.

From that point on, his dependence on glasses became deeper. Since that tragic night, he has slept with his glasses on because he is afraid something might happen during the night and he would not be able to see.

Air Force Col. Leo Hurley removes surface cells from the eye of Master Sgt. Naomi Simmons-Redwine at the Warfighter Laser Surgery Center at Wright-Patterson AFB, Ohio. (Photo by Mr. Robert Memering)

Enhancement tool

The life of the 39 year-old technical sergeant dramatically changed that evening in June, nearly six years ago and it has recently changed again. Finally, after years of restless sleep and wearing out six pair of glasses that he would only take off in the shower, Sgt. Neldon can get a good night's rest.

This past December he had photorefractive keratectomy, or PRK, laser surgery performed at the Wright-Patterson Air Force Base, Ohio, Warfighter Laser Surgery Center. He is no longer dependent on those glasses.

This kind of result encompasses the goal of the center. "Laser surgery will enhance the warfighter's capability," says Dr. (Col) Leo Hurley, chief of ophthalmology and refractive surgery at Wright-Patt.

Dr. Hurley considers the surgery a warfighter's enhancement tool because it will allow men and women to do their job more efficiently, and without glasses. "Our goal is to use technology to build a better warrior," he said.

Simple effective procedure

The surgery is elective and available only to active duty members. Performed as an outpatient procedure, it takes approximately 15 minutes for both eyes.

The patient lays flat and numbing drops are administered to the eye. The eye is then cleaned to clear the area tissue of bacteria, wiped with gauze and more drops are administered. Meanwhile the other eye is covered to allow the eye being operated on a better ability to focus. A lid clamp is placed on the eye to ensure the eye remains open.

A corneal marker is used to drop alcohol onto the eye to soften the tissue, and the loosened outer layer of the eye over the area to be treated is removed with a surgical sponge.

The laser is zeroed in on the pupil and carves the prescription for correction. Once accomplished, the eye is flushed with a chilled, balanced saline solution to rehydrate the eye and medicine drops are administered including a steroid, antibiotic and an anti-inflammatory.

A contact lens bandage is placed on the eye to protect it while the skin tissue grows back. It also offers comfort for the abrasion where the tissue had been scraped away. The procedure is then repeated on the other eye.

Improved vision is realized immediately following the surgery and the patient is placed on convalescent leave for one week. Recovery takes two to three weeks for maximum acuity, said Dr. Hurley.

"Refractive surgery has been around since 1988 when the procedure was first done on a sighted eye," said Dr. Hurley. The Navy led the military with a study with good results and the program expanded. When congress allocated $15 million in fiscal year 2000 for the Defense Department laser program, the other services actively joined in. Military laser centers have been established among the branches across the country.

Gearing to accomodate need

The Air Force has created three with two more projected to open this year. Wright-Patterson Medical Center is home for one of the three centers, which officially opened the Warfighter Laser Surgery Center in August 2000. The other two are at Wilford Hall, Texas and the Air Force Academy, Colo.

Dr. Hurley said the center's goal is to perform 2000 surgeries a year, approximately 20 per week. There are approximately 350,000 active duty Air Force members with about forty percent being dependent on glasses to do their job. The target is to reach that forty percent. The current backlog indicates that it will

probably be four to six years to reach that goal.

Once met, consideration could be given to retirees and dependents on a space-available basis.

According to the American Academy of Ophthalmology, common refractive surgery procedures include: photorefractive keratectomy, or PRK, laser in situ keratomileusis, or LASIK, astigmatic keratotomy and intrastromal corneal rings. PRK and LASIK have emerged as significant advancements in corrective surgery.

The military laser centers use the PRK procedure. According to Dr. Hurley, PRK uses the same precise laser technology that is used in LASIK. After the healing process, both procedures produce similar results for the average patient wearing corrective lenses.

An essential difference

Dr. Hurley said PRK, unlike LASIK, does not require the cornea to be cut before the application of the laser energy. The lack of this incision leaves the PRK-treated eye structurally sound after surgery.

In combat conditions, where a surgeon and a medical environment are unavailable and the risk of eye trauma is higher, military ophthalmologists believe the PRK-treated cornea is a better choice than LASIK where a flap in the cornea is actually cut.

Dr. Hurley said there are several categories for the surgery. The first two involve pilots and those professions that deal with gas masks and respirators. He feels that the pilots are at the tip of the spear of air power with many support people behind them enabling them to fly their aircraft. It is essential that they are equipped in the best way possible in order for all of them to do their job.

"Only a certain percentage will be allowed to get the surgery before it is offered to a whole generation of pilots," said Dr. Hurley. More data will be studied as well as the long-term effects of the surgery.

Under wartime conditions

According to Dr. Hurley, a stressful environment, such as a cockpit or battlefield, can cause many problems for those dependent on glasses or contacts. Extreme temperatures can affect their clarity, glasses can be knocked off and contacts can pop out. It is difficult to evade and escape the enemy when one can't see.

For those in combat who depend on gas masks as part of their survival gear, the concern of an improper seal becomes a life or death situation and glasses can interfere with a proper mask seal. With laser surgery, eyesight is improved to the point where the dependence on glasses is eliminated.

Any time an aviator ejects from a cockpit, glasses or contacts can be lost. If their dependence on glasses is great, it can cause a major concern once on the ground. The aviator's struggle to get to safety is even more compromised.

One aviator was so pleased with the results of the surgery, he feels confident of surviving in a combat situation. He said, jokingly that prior to the surgery, if he had to eject from his aircraft and lost his glasses, he probably would have surrendered if confronted by any unseen object, even a bush.

Laser surgery not only offers an obvious physical benefit, improved eyesight, it also enhances one's self-esteem for better quality of life.

— Ms. Deb Mercurio, 74th Medical Group Public Affairs

First transportable hyperberic chamber deploys

A team from the U.S. Air Force School of Aerospace Medicine at Brooks Air Force Base, Texas, recently installed and placed into operation the first Defense Department transportable hyperbaric chamber at Johnston Atoll, a U.S. possession in the Pacific ocean.

Portable and versatile

The emergency evacuation hyperbaric stretcher, known as the EEHS, is a lightweight fully transportable hyperbaric chamber capable of treating decompression sickness from altitude exposure or ocean diving, arterial gas embolism, crush injuries, burns, blood loss and many other wounds. The transportable chamber delivers 100 percent oxygen to the patient while under pressure up to three atmospheres, and can be used to treat the patient during transport.

It weighs approximately 110 pounds and can be transported by ambulance, motor vehicle, or on a number of different aircraft, including the C-9, C-130, C-141, C-5, KC-135, or MH-60 helicopter.

The chamber allows aircraft to fly faster and more efficiently without regard for patient altitude requirements. It provides the appropriate environment for treatment or transport.

The chamber was modified and certified under a foreign comparative test program at the Air Force School of Aerospace Medicine. The hyperbaric chamber is purchased by the Air Force, Navy and Coast Guard.

Units are anticipated to be deployed in support of high altitude and diving operations in remote environments, as support for Special Forces and to augment the capabilities of military medical treatment facilities.

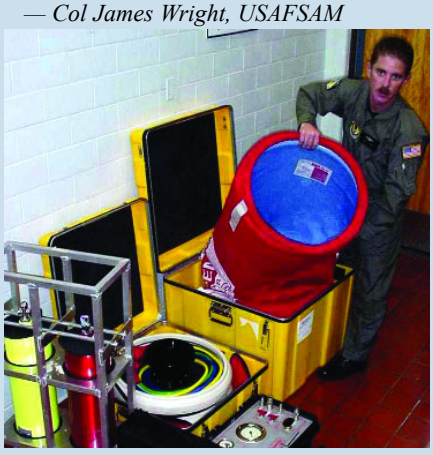
Equipment fills need

Johnston Atoll was an ideal location for the portable chamber because of its remote location 717 nautical miles from the nearest hyperbaric chamber.

The aerospace medicine team instructed medical personnel at Johnston Atoll in hyperbaric medicine and then showed them how to operate the chamber. It will be under the supervision of the Davis Hyperbaric Laboratory at Brooks.

The program manager for the hyperbaric chamber is Dr. Larry Krock, chief scientist for the School of Aerospace Medicine. Other team members were Tech. Sgt. Roy Cano, Master Sgt. Mark Sylvis, and Col. James Wright.

— Col James Wright, USAFSAM



Medical technicians at the 15th ABW Johnston Atoll Airfield, unload the emergency evacuation hyperbaric stretcher during a training exercise. (Courtesy photo)

AFRL fatigue research improving human weapon system performance

Everyone has their own method to combat fatigue, but now they have help avoiding it. Researchers with the Air Force Research Laboratory's Warfighter Fatigue Countermeasures program are taking the guesswork out of fatigue management.

They are developing the fatigue avoidance scheduling tool, or FAST, which evaluates the impact of mission schedules and previous rest on performance. Using this tool, mission planners and aircrews can identify periods when fatigue poses a significant risk and implement countermeasures. And its applications go beyond the cockpit.

FAST uses a recognized mathematical model of sleep, activity, fatigue and task effectiveness, or SAFTE, to relate human sleep to performance, providing the military planner the first computerized tool using a homeostatic model to optimize aviator performance under conditions of limited sleep.

Not only can this capability be used to optimize human performance while minimizing the need for pharmacological aids, it can improve flight safety and reduce operational risks.

FAST is Windows-based with a graphical user interface, giving simultaneous comparisons of multiple schedules and generating reusable schedules with graphic and statistical outputs. It provides the flight planner with control over model parameters and output. Examples of output would be population sample, performance task measures and number of days, among others.

Wide-reaching benefits

Industry can also benefit from this research. This tool could be useful to planners and schedulers in highly complex and safety critical commercial environments such as transportation, nuclear power plants and industrial plants.

The Federal Railroad Administration is already funding a broad-based evaluation of a FAST derivative for use in both train crew scheduling and to assess the potential of fatigue as a contributing factor in railroad accident investigations.

FAST is a result of a small business innovative research by NTI, Inc., in conjunction with sub-contractor SAIC. They used 20 years of sleep and circadian rhythm research to develop the model, then refined it with studies manipulating naps, schedules and pilot data from flight simulator tasks.

During Phase II of the project, NTI is conducting additional studies to collect data needed to expand the tools' capabilities so that performance effects of sleep aids and stimulants can be incorporated into the SAFTE model.

Additional efforts will increase the tool's applicability by customizing user interface for different user communities. For instance, to support global power missions, the mission planner would input data on the crew's specific mission, as well as information on the crew's pre-mission sleep schedules.

Predicts performance levels

FAST™ would then calculate and display the predicted performance levels for each point in the mission. Knee-pad ready schedules can also be generated for each crewmember showing local, Zulu and mission time, and whether it will be light or dark outside as the mission crosses time zones.

Air Force Research Laboratory Warfighter Fatigue Countermeasures program is currently researching ways to avoid fatigue in the cockpit. (Illustration by Mr. Eugene Lehman, AFIT)

FAST is one of the products of the AFRL Warfighter Fatigue Countermeasures Science and Technology program. With increasing emphasis on global power projection, there exists a significant operational requirement throughout the Defense Department for research and development of effective fatigue management technologies for sustained operations.

The Defense Department has documented mission failures and fatal mishaps resulting in loss of trained personnel and valuable aerospace platforms due to human fatigue. For example, 26 percent of major non-ejection accidents in combat aircraft are attributable to failures of attention, and 15 percent are attributable to fatigue and circadian phenomena. In addition, documentation exists of the detrimental effects of fatigue on judgment and decision-making.

Reducing mishaps

Today's varying operations and personnel tempos push the need to perform at high levels of efficiency for long periods of time. Without effective fatigue management strategies, we increase the risk of fatal mishaps and require more people and effort to get the job done.

AFRL's program is the only Defense Department science and technology program managing aircrew fatigue in global and expeditionary force operations and operating a safe-to-fly program for assessing pharmaceutical countermeasures for fatigue.

Managing fatigue is a challenge facing human warfighters who plan and execute Air Force missions. Work will continue providing technology solutions that will extend and enhance performance during night, surge, global attack and around-the-clock command, control and information operations.

— Dr William Storm, AFRL Human Effectiveness Directorate, Dr. Douglas Eddy, NTI, Inc., and Dr. Steven Hursh, SAIC

The life you save could be your own

Lt. Col. Phil Samples and Capt. T. Shawn Garten
Clinical Pharmacists
96th Medical Group
Eglin Air Force Base, Fla.

Substance abuse can affect the human weapon system in many ways. Substance abuse can vary all the way from the addiction of nicotine and alcohol, to illegal substances such as cocaine, marijuana, and more recently, Ecstasy. The purpose of this article is to acquaint the reader with the real dangers and effects of Ecstasy on the human weapon system.

Use on the rise

Ecstasy use is on the rise — it's nearly doubled since 1998. It is common knowledge that Ecstasy is an illegal drug, but what's hidden behind it's allure are the side effects, which can have lifelong implications.

Ecstasy, or 3,4-methylenedioxymethamphetamine, or MDMA, is popular among young adults in the 18 to 25 year-old range. It is most often found at dance clubs and rave parties.

Patented in 1914 as an appetite suppressant, it never achieved clinical use due to it's lack of effictiveness and side effects.

Ecstasy is a Schedule I substance, meaning it has a high potential for abuse and no currently accepted medical use.

What are you getting?

When you buy Ecstasy, you really don't know what you're getting since there are no legitimate commercial manufacturers of Ecstasy. A recent amnesty turn-in of the drug at an addiction unit found that of the 25 samples, nine purported to be Ecstasy contained no trace of MDMA; the others contained the drug in widely varying amounts.

A single does of Ecstasy can be fatal — and if not fatal, studies have shown that it can cause brain damage.

In a related study, researchers found that heavy Ecstasy users have memory problems that may persist for as long as two weeks after having used the drug.

And studies suggest that the more you use Ecstasy, the greater the extent of the brain damage.

Structurally, MDMA is a substituted amphetamine. As such, it causes: increased heart rate and body core temperature, seizures, irregular heart rhythm, increased blood pressure, muscle tension, break down of muscle with increased risk of acute kidney failure, involuntary teeth clenching, nausea, blurred vision, rapid eye movements, faintness, chills, sweating, insomnia and fatigue.

What's more, it causes a massive release of serotonin, the mood-stabilizing chemical, resulting in the so-called "high." Users report a feeling of calm and a sense of well-being to those around them, often with a heightened perception of color, sound and touch. These effects start after about 30 minutes and can last for several hours.

Long lasting effects

But whenever there's a high, there's a low — depression. Ecstasy sometimes causes users to experience depression for several days following its use.

Depression has also been observed to reoccur in years to come without further Ecstasy use.

Panic attacks, inability to sleep, nervousness, hallucinations and paranoia has been reported to occur or persist as many as two years after the last ingestion of the drug.

Not only is using Ecstasy unsafe, but it's illegal. Military abusers typically face court-martial charges, potentially resulting in jail time, discharge from the military and other penalties, such as reduction in rank and fines.

At Langley Air Force Base, Va., undercover Air Force agents discovered a massive drug ring – predominantly Ecstasy, but also LSD, cocaine, marijuana, steroids and ketamine were also involved.

More than two dozen airmen, 15 civilians and four sailors were involved in buying and selling on base. And last year a cadet at the United States Air Force Academy was sentenced to three and a half years confinement for his involvement with Ecstasy.

Ecstasy use poses at least three hazards. First, the user cannot be certain that the substance is pure MDMA — in fact it may not be MDMA at all, but one of the other popular club drugs, even flunitrazepam, the so called "date rape drug."

Second, the physiological toxicity of Ecstasy range from benign effects such as muscle soreness, jaw clenching or insomnia, to catastrophic events such as hypothermia, seizures, renal failure and death. This is like playing Russian roulette with a fully loaded weapon — you know it's going to cause damage, you just don't know if it's going to kill.

Third, it is clear that Ecstasy adversely affects the nervous system. While a direct, causal relationship has not clearly been established between Ecstasy and long-term psychological damage, it seems logical the drug must have unwanted psychological ramifications.

The bottom line

Together we, the authors of this article, have more than 40 years in health care. We have seen and studied medications and drugs of abuse thoroughly.

Ecstasy is scary in its potential to do long term harm — it's not safe. Stay away from Ecstasy, and the life you save can be your own.

Hanscom airman found guilty of Ecstasy use

An airman at Hanscom Air Force Base, Ma., was convicted of multiple uses of ecstasy Dec. 11, 2001.

The military judge imposed a sentence of a bad conduct discharge, five months confinement and reduction to airman basic.

During the sentencing hearing, she made a statement requesting that she not receive a bad conduct discharge.

The government argued that a bad conduct discharge was appropriate and requested 10 months confinement and reduction in rank to airman basic based on her repeated drug use and the lengthy period of time in which the drug use occurred.

— Capt. Richard McDermott, ESC Staff Judge Advocate Office

Preparation key to coping with deployment

— Lt. Col. Bill Wall
AFMC Behavioral Health

In the movie "*Black Hawk Down*" you get a sense of what kinds of unexpected events can take place during peacemaking missions — scenes of vast numbers of refugees, personnel exposed to horrific images and verbal accounts of man-made inhumanity.

Deployments can bring images of human tragedy brought on by famine, floods, hurricanes and tornadoes, as well as those that could involve chemical or biological weapons. Air Force personnel train for these types of missions.

Preparation is the key

Effective preparation is one of the great lessons learned from experience gathered during military operations like Desert Storm, and peace keeping operations in Bosnia, Somalia and Haiti.

Experience tells us about the importance of paying attention to combat stress — sometimes referred to as shell shock, war neuroses, battle shock and battle fatigue. In fact, in combat situations, the level of stress casualties can equal the number of wounded in action.

In addition, civilians and military personnel can experience significant disruption in their ability to maintain normal daily activities through such life events as violent crimes, loved one's death, and illness. These events, among others, have major effects in challenging individuals' skills to cope.

How to cope with stress

Substantial evidence has been collected about the long-term effects — post traumatic stress disorder. The subject of coping with stress is now incorporated in the training of many occupational groups including law enforcement personnel, fire fighters, emergency medical technicians and other healthcare professionals.

Military organizations have acknowledged the importance of stress factors for military effectiveness and well-being. As a result, there are many new initiatives in the area of stress management.

Research has shown that families and service members do better when prepared for deployment. Preparations typically include ensuring legal, automotive, financial and household matters are structured so they function well in the service member's absence.

Emotional preparation for those left behind may include letting relatives know how to contact the deployed member, preparing children with what to expect, and assisting spouses to manage the "single parent" lifestyle.

As a HAZMET team suits-up for decontamination, firefighters from Wright-Patterson AFB, Ohio, are on alert status in a recent weapons of mass destruction exercise. In pre-exposure preparation, training personnel are trained to to cope with stress associated with disasters. (Courtesy photo)

For the service member, however, there is an area of deployment that may be far more important than what is packed in the duffle bag. But, how do you prepare emotionally for a deployment that may expose you to trauma?

Drawing on past experiences

Psychological preparation is done through a process called "pre-exposure preparation," or PEP, training.

The primary preparation for coping with stress associated with any future event is previous experience. A goal of all training should be to build upon a person's experience base so that it can be harvested when necessary.

PEP training is the key to knowing what to do to maximize operational performance, minimize impairment and prevent long-term post traumatic stress conditions. It's a three-step training process.

Communicate

Step one is to acknowledge the stressful feelings you are experiencing and let others know how you feel. Talking about it helps you recognize you are experiencing stress, and gives others an opportunity to acknowledge their own feelings. Such communication can have the immediate effect of mutual support.

Step two is to know and practice positive stress behaviors. Know and stay in touch with your purpose, and be a team player — think "we" instead of "me."

Be confident

Develop a sense of confidence about your group's ability to accomplish the mission and practice your spiritual beliefs as a source of support. Change the things you can change — what you think, do and feel. Accept the things you cannot change — what other's think, do and feel, and what has already happened.

Step three is to avoid sources of ineffective coping, including insufficient sleep and nourishment, or drinking alcohol or using drugs. Don't let yourself get too hungry, angry, lonely or tired.

You can do it

A final thought about dealing with stress: You, alone, can do it; but you can't do it alone.

Participating in pre-exposure preparation training is a critical component to successful deployment or civilian occupational circumstances that may produce psychological or emotional trauma.

Deployments are stressful. It is your responsibility to deal with stress by knowing and using the methods most effective for you, but your ability to effectively deal with stress will be greatly enhanced by letting others be a part of your efforts.

Prototype transport system moves evacuees quickly and economically

It's not as quick as traveling through cyberspace, but a new patient transport device being developed at Brooks Air Force Base, Texas, may give future Air Force air evacuees the sensation of having traveled "in the blink of an eye." Called the patient support pallet, or PSP, the prototype system being evaluated by the 311th Human Systems Program Office is designed to rapidly re-configure Air Force cargo aircraft into air ambulances.

Pacific Air Forces and Air Mobility Command are two major customers interested in this system that represents a significant evolutionary advancement in air evacuation.

Urgent requirement

"Less than a year ago during 'Pacific Warrior' exercise in Hawaii, PACAF decided it needed a new litter system to transport patients," said Col. Daniel Berry, 311th HSW SPO's Aeromedical and Medical Information Systems division chief.

PACAF's urgent requirement, Col. Berry explained, is based on their need to move patients more rapidly and efficiently using available air transport resources. These resources are dwindling due to maintenance issues and the scheduled retirement of the C-141, to be phased out by 2004. As a consequence, insufficient aircraft capable of fulfilling air evacuation requirements has significantly hampered PACAF transport missions.

In calendar year 2000, less than half of the 8,700-plus patients air evacuated in the Pacific region arrived at their destination on time. In many cases, mission delays averaged in excess of four hours, according to PACAF officials.

"PACAF approached us with a requirement to develop a portable patient litter system with roll-on/roll-off capability," Col. Berry said, noting that such a device could be used on KC-135 aircraft. "KC-135s were not designed for patient litters. Unlike other aircraft where litters can be tied to the floor, it's not possible in KC-135s because floor temperature when airborne is 32 degrees Fahrenheit."

PSP provides a solution. It could greatly expand the number of available air evacuation-capable aircraft, including KC-135s and KC-10s that historically have not been used as air ambulances because of their design as fuel tankers.

"We searched the world for commercial off-the-shelf systems with palletized seats," Col. Berry said. One of the four companies that had systems, that could be modified for Air Force use, was contracted to develop a prototype that is currently being tested and evaluated.

Just a beginning

The prototype consists of a reinforced metal pallet featuring four variations of litter-airline seat configurations, mounted to the pallet, which can accommodate six people. Col. Berry said future advance prototypes will feature electrical power, oxygen and lighting capabilities. There are also plans to develop a galley and restroom-mounted "comfort" pallet.

In January, the PSP was evaluated during a C-17 training flight. The 446th Airlift Wing from McChord Air Force Base, Wash., provided the Air Reserve C-17 that arrived at Lackland AFB's Kelly Annex Jan. 18.

Flight nurses and air evacuation technicians from the U.S. Air Force School of Aerospace Medicine's Critical Care Air Transport Team, or CCATT, assisted SPO personnel in the evaluation.

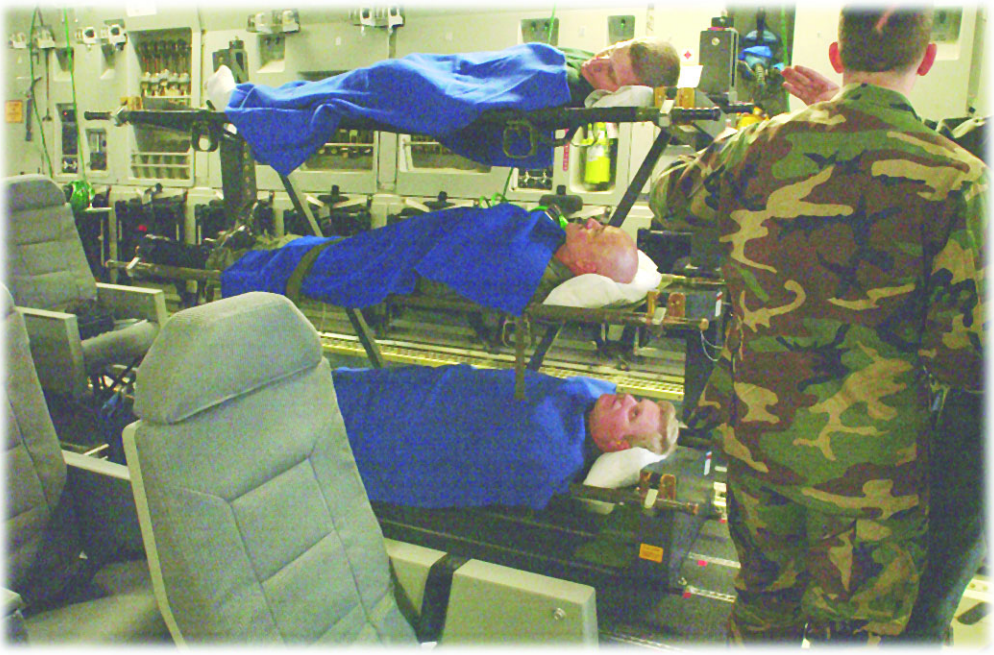
Col. Calvin Williams, a USAFSAM adjunct faculty member who was a flight participant, said the training mission represented the mirror force concept at its best. Multiple Air Force assets were leveraged during the PSP test mission that also provided training for CCATT students and the Air Reserve flight crew.

Strenghtening the mission

SPO evaluators are optimistic that the PSP will save its customers money. Projected annual savings to PACAF is estimated to be $6.6 million. Next, PACAF is scheduled to field test the PSP on a KC-135 during an actual air evacuation mission from Hickam AFB, Hawaii, to Yokoto and Kadena Air Bases, Japan.

Col. Berry noted three of the four prototypes are being rushed into service to meet current aeromedical evacuation needs.

— Mr. Rudy Purificato and 2nd Lt. Stephen Kalinowsky, 311th HSW



Critical Care Air Transport Team students from the U.S. Air Force School of Aerospace Medicine observe the patient support pallet's configuration, featuring a litter and seat combination, during a recent training mission aboard a C-17. The training flight represented the mirror force concept, in which resources from the Air Force Reserve and the active component were used to support a joint mission. (Photo by Tech. Sgt. Pedro Ybanez, 311th HSW)

Photo by Staff Sgt. Stacee McCausland, AFFTC

Hollywood comes calling

EDWARDS AIR FORCE BASE, Calif. — Mr. Arnold Schwarzenegger and his son Patrick ham it up in front of an F-22 Raptor with members of Edwards during his visit to the base in December. The star was on the scene at Edwards for a photo shoot with *Talk Magazine.*

In a recent poll taken by the magazine, military members voted Mr. Schwarzenegger the star they would most like to meet. The photos were published in the February issue of *Talk*.

— Information provided by AFFTC Public Affairs

U.S.A.F. Museum tours look 'behind the scenes'

WRIGHT PATTERSON AIR FORCE BASE, Ohio — Members of the public now have the opportunity to experience the visually intriguing world that brings U.S. Air Force Museum aircraft to life. Whether watching the restoration of the newly acquired B-2 Stealth Bomber, viewing integral pieces being placed together to complete a 1918 World War I SPAD XIII or learning about the restoration process, the visitor will be given a chance to see and become part of behind the scenes.

Interested individuals can now register for the Museum's Spring "Behind the Scenes" Tours, scheduled for March 8, April 12 and May 10.

The tours will take visitors to the museum's restoration area located in hangars on the historic Wright Field flight line. Visitors will be able to see a variety of aircraft in varying stages of restoration, learn techniques used in restoration and become acquainted with bits of our nation's history.

Limited to 40 participants, the tours are free and will last from 12:45 to 3:15 p.m. Registered participants should meet in the museum's Carney Auditorium between 12:15 and 12:30 p.m. No group reservations are accepted. Participants must be at least 12 years old; an adult must accompany those between 12 and 18. The museum will provide bus transportion to the tour.

To make tour reservations call the Museum at (937) 255-3286, ext. 302.

— Information provided by USAF Museum Public Affairs

Logistics consultants now available in Michigan

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — Air Force Materiel Command officials have established an operating location at the Federal Center in Battle Creek, Mich., to manage Air Force implementation of the federal catalog program and associated processes with other services and agencies.

The center is working as logistics consultants to support customer requirements with the Defense Logistics Information Service in Michigan, which is the Defense Department consolidated and centralized cataloging center.

The objective in the policy arena is to interpret AFMC policy as it relates to provisioning, cataloging, standardization and all Air Force data elements that relate to the support agreement with the cataloging center.

The Michigan-based logisticians are the program managers for the AFMC logistics support systems used Air Force wide. They also interface with the cataloging center, provide system access and trouble-shoot system problems.

— Information provided by AFMC Public Affairs

New program saves time, errors for maintainers

MAXWELL AIR FORCE BASE, GUNTER ANNEX, Ala.— Aircraft maintainers will soon be able to research an airframe's history and manage weapon systems with the click of a mouse, thanks to work done at the Standard Systems Group.

SSG's Logistics Information Maintenance Systems Division program office and Software Factory experts developed the core automated maintenance systems, or CAMS, graphical user interface as a web-based system that lays the groundwork to eventually migrate to an integrated maintenance system.

An estimated 166,000 aircraft, missile, communications electronics, and support equipment maintainers at 78 U.S. installations around the world currently use the CAMS program, to track equipment inspections, time changes, document maintenance data and aircraft status and recording personal training.

SSG developers took more than 800 user requirements and prioritized them.

Many of the screens have additional up-front edits incorporated so the user will be notified that something needs to be corrected before ever sending the transaction to CAMS to be processed. These edits will save time, since maintainers will not have to wait for the transaction to be processed before receiving a reject notice.

Seven Air Force bases are operationally testing the new program and any significant problems will be repaired before worldwide release early this Spring.

— Information provided by SSG Public Affairs

AFRL awards Eastman Kodak research contract

ROME, N.Y. — Air Force Research Laboratory Information Directorate has awarded a contract to Eastman Kodak Co. of Rochester for research in hyperspectral imaging. The three-year agreement will produce software to fuse hyperspectral information with other types of intelligence data.

Hyperspectral imagery consists of hundreds of "spectra," or measurements of reflected or emitted energy. The intensity of this energy can be measured at various wavelengths. A unique spectral "signature" allows that object to be identified through various spectral analyses.

— Information provided by AFRL Public Affairs

'Smart' cards a secure combination for e-mail

In what could be termed a "smarter" way to send e-mail, the Air Force is leaping into the digital age with the advent of the Defense Department Public Key Infrastructure, or PKI.

Deployed by the Electronic Systems Center's Air Force Public Key Infrastructure Systems Program Office at San Antonio, Texas, it uses technology that enables numerous applications such as medium grade service, commonly known as MGS Secure E-mail. This application allows everyday unclassified e-mail traffic to be digitally signed and encrypted.

The current e-mail system has some serious flaws, said to Mr. Chuck Courtney, Air Force PKI Awareness and Training Office.

"When you receive an e-mail you really don't know if it comes from the person who sent it," he said. "You also can't be sure someone didn't alter the content of the original message and then forward it."

He said these are serious problems, especially when dealing with official correspondence. For instance, if a commander issues a new policy letter, members can see the signature on the paper, and thus believe with a degree of certainty, the information is genuine.

Paperless pros and cons

And that's the knock against current e-mail systems and one of the stumbling blocks for the move to a paperless Air Force, Mr. Courtney said. E-mail might seem to be the ideal medium to replace paper correspondence, the needed security was not possible — until now.

With the secure e-mail, this same commander can type the new policy e-mail, digitally sign it and send it to every member in the unit, he said. The process that enables this might seem complicated but it's actually quite simple.

The new identification card currently being issued throughout the Air Force, commonly referred to as "common access card," uses integrated circuit chips and other means to store information on the card itself. Once a new message is composed, the user inserts their card into a special card reader installed on their computer, enters their personal identification number and clicks the appropriate icon for digital signature or encryption.

Security and more

But signing e-mail is only the tip of the iceberg. The key enables secure e-mail and much more. In the near future, authorized users will digitally sign Defense Department documents and forms.

The Air Force moves into the future with the public key infrastructure system which allows medium grade secure emails to be digitally signed and encrypted. (Photo by Mr. Daryl Mayer, ESC Public Affairs).

"This eliminates the need to visit several offices for signed coordination or processing forms," Mr. Courtney said. "The key will be a tool for use for electronic signatures on performance reports, travel vouchers and various other applications. It has already been incorporated into the Automated Business Services System."

Medium grade service secure e-mail also allows you to encrypt e-mail that only the intended recipient can decipher and read, effectively allowing two people to securely communicate through e-mail.

"This is an efficient way to securely process official information," Mr. Courtney said. But he points out that MGS Secure E-mail is not a substitute for the Defense Messaging System.

Another security feature is data integrity. The key will issue a warning when an e-mail message has been modified. "That way if someone tries to modify your message and forward it on as your original words, the recipient will be signaled that the message has been altered from its original format," he said. "All of these tasks are accomplished by simply clicking on the appropriate icons in the e-mail program toolbar."

Meanwhile behind the scenes, the system reads the certificates issued to the user and provides specific services those certificates grant. Three certificates will be issued, Mr. Courtney said.

The identity certificate is used to digitally sign defense department documents and authenticate secure web access. The e-mail signature certificate is used to digitally sign e-mail messages and the e-mail encryption certificate allow users to encrypt and decrypt messages.

Certificates are valid for three years unless other circumstances present themselves, such reassignment, name change, lost access card, etc.

There are several advantages to using PKI, according to Mr. Courtney. "It authenticates that a person or system is who or what they claim," he said. "It gives data integrity to guard against unauthorized changes to information.

"It prevents a person from denying that a communication or transaction took place as recorded. And if you use the encryption, it prevents disclosing information to unauthorized users."

Needed and timely

The end result, according to Mr. Courtney, is an infrastructure that's eco-friendly, easy to use and more secure.

There are also current concerns about traditional mail safety and the burden security measures are placing on the inter- and intra-base mail systems. He said less reliance on paper products means information flows safely and quickly, even to remote or deployed locations.

Getting the program up and running is being done on an installation-to-installation basis. Traveling teams arrive at a base and within a few weeks common accesscards are issued. Card readers and software are then installed on computers and each user and systems administrator is fully trained on using the system.

— Master Sgt Daryl Mayer, ESC Public Affairs

Raptor lands at Edwards, boosts test capability

Another Raptor recently joined the F-22 Combined Test Force's fleet adding increased flexibility to the Raptor's ongoing developmental test and evaluation program. The additional aircraft will allow the test force to test the weapon system's avionics suite in greater depth.

Raptor 4007 arrived from Lockheed Martin's plant in Marietta, Ga., with an integrated suite that brings together much of the technology demonstrated on earlier Raptor configurations. Each new Raptor arriving at Edwards is one step closer to the production configuration that will be purchased by the Air Force.

Right on track

According to Col. Chris Seat, F-22 combined test force fleet director, the added aircraft will help keep his team on track with the current test schedule.

"In order to get the required avionics and logistics testing complete before the start of the dedicated initial operational test and evaluation phase currently scheduled for April 2003, we must routinely schedule two avionics test sorties per day and keep one aircraft available for ground logistics testing," said Col. Seat.

Providing flexibility

"The arrival of 4007 will give the test force critically needed flexibility to maintain this schedule," he said.

Raptor 4007's avionics suite is equipped with integrated sensor fusion capabilities that encompass electronic warfare and radar systems as well as communication, navigation and identification, or CNI, capabilities.

In addition, test experts will evaluate how the aircraft's fire control system functions within the integrated avionics suite.

A dual purpose

The new arrival will also be used as a second missile test aircraft giving the CTF increased flexibility in testing the Raptor's guided launch capabilities.

All total, eleven Raptors will be used in developmental and operational tests. This includes the Raptor used in live-fire testing at Wright-Patterson AFB, Ohio, in August.

The final four test aircraft are expected to be in place at Edwards by the end of summer 2002.

— Ms. Leigh Anne Bierstine, AFFTC Public Affairs (Cover photo courtesy of Lockheed Martin)

Demons deploy, keep eye on space shuttle

While many associate Operation Noble Eagle with fighter pilots patrolling continental United States' skies, the 728th Air Control Squadron members from Eglin Air Force Base, Fla., are changing the way decision makers see the homeland defense big picture.

The squadron typically deploys to Southwest Asia to control allied aircraft enforcing the Iraqi southern no-fly zone, but it also saw action in the Balkan wars and South American counter-drug operations.

This time, the squadron deployed to Cape Canaveral Air Force Station, Fla., as a major part of beefed-up security for the Dec. 5 Space Shuttle Endeavor mission, which was NASA's first manned space launch since Sept. 11.

"Using our mobile radar, we provide the theater commander a 'bird's-eye view' of a designated airspace," said Lt. Col. Randy Nelson, 728th Air Control Squadron commander. "Noble Eagle is the first time we've done this for real inside the United States."

Unlike combat aircraft radar, squadron experts can detect airborne objects farther than 200 miles away from the site along with flight information for each "blip," Col. Nelson said. A blip could be an F-15C Eagle looking for a refueling tanker, an enemy bomber penetrating friendly airspace or a commercial flight from Atlanta to New York.

Col. Nelson said details like altitude, bearing and speed can be used to either guide an interceptor to the suspicious aircraft or "hand over" an aircraft to another air controlling authority, such as an airborne warning and control aircraft. The squadron can also, via data link capability, receive information from various sources and transmit it to other agencies that may technically not be able to communicate together directly.

"The interface coordination mission is just as critical as providing our own air control picture," said Capt. Lloyd Herbert, the 728th maintenance flight commander. "Regardless of any particular mission, all the airmen know why we are deployed here."

And the "here" can be anywhere, anytime, for any period of time, Col. Nelson said.

"We're warriors," the commander said. "We've deployed to austere locations and we've been to exotic places like this one — the mission was always accomplished."

"We had a good mix of seasoned people and new airmen in this group," said Maj. Scot Shively, squadron operations officer. "Every one of them was hand picked to support this mission."

Though Maj. Shively wouldn't speculate as to how long the squadron would remain in the field or if it would return for future launches, he did offer a bottom line: "We're the best Air Force in history, and people should rest assured knowing that we're on duty to help protect the country."

— Capt. Jason Medina, 33rd Fighter Wing Public Affairs

Tech. Sgt. Nyron Alexander, 728th Air Control Squadron combat support flight, refuels his 5-ton truck during a tour to support Operation Noble Eagle. Using a ground-based mobile radar and communications link, his squadron provides theater commanders an "air picture" of a designated air space. (Photo by Capt, Jason Medina, AAC)

Air Force's top warfighter meets the Raptor

As the leader of Air Combat Command recently touched down in an F-16 chase plane at Edwards Air Force Base, Calif., he had just one word to describe the F-22 Raptor he was tailing — "awesome."

"I never thought I would see this kind of capability in an aircraft," said ACC Commander Gen. Hal Hornburg during his visit to Edwards in January.

The general visited the Flight Test Center so he could see what the flight test community is bringing to the warfighters he commands. After a series of extensive briefings on the F-22's capabilities, Gen. Hornburg made it clear he is relying on the flight test experts at Edwards to push the F-22 envelope.

"When our more inexperienced pilots get their hands on the F-22 they will know exactly what they can and can't do," said Gen. Hornburg. "There is an enormous amount of proficiency and discipline that goes into testing this aircraft. Edwards is top to bottom loaded with professionals, and I know they will hand it to us in the best condition that any aircraft could ever be in."

In addition to flying with the F-22 Combined Test Force, Gen. Hornburg was introduced to numerous weapons systems undergoing flight test and evaluation at Edwards including the Global Hawk and the Unmanned Combat Air Vehicle, known as the UCAV.

Maj. Gen. Doug Pearson, commander of the Flight Test Center, accompanied Gen. Hornburg on several of his stops.

Throughout the visit the two generals talked of a new partnership that will serve both the flight test center and ACC in the future. "Gen. Pearson and I are going to work together and partner in a way that has not been done before," said Gen. Hornburg. "The new prototypes that are one day going to be the line of the Air Force all start here," said the ACC leader.

"The visits to the test pilot school and to test forces across the flight test center have helped to show that putting the right person in the F-22 today will serve the warfighter well tomorrow," Gen. Pearson said.

— Ms. Leigh Anne Bierstine, AFFTC Public Affairs

A day in the life of a NATO crew member...

AWACS operator supports Operation Noble Eagle

When opportunity came knocking for NATO E-3 Airborne Warning and Control System, or AWACS, crew members to join the United States in its war on terrorism, 180 of them from 13 different countries answered the call.

So it is with Andy, a 28-year-old technical sergeant from Germany who serves as a surveillance operator aboard one of the five NATO, airplanes stationed at Tinker Air Force Base, Okla., to assist with Operation Noble Eagle.

NATO's arrival to the U.S. stems from the Sept. 11 terrorist attacks and Article 5 of the 1949 Washington Treaty, which basically states "an attack on one member of the alliance is an attack on all."

"You also have to realize that this is the first time we've got to come over here and help the Americans," Andy said.

"For me, it's a big honor because a lot of European countries owe their freedom and democracy to the Americans. It means a lot to my parents and friends back home, as well."

Andy's enthusiasm to assist America is shared by the other 17 crew members who boarded a NATO E-3 AWACS en route to the East Coast to participate in a homeland defense mission.

All in a days work

This day, like so many others since Andy arrived in the states in early October, began very early. "In this case, about 3:30," he said. "In the morning, I like to have some quiet time, so I'll get up, take a shower," Andy said. "Basically, I'll turn on the news to see what's happening.

"After the news, I'll listen to some music while I'm getting my mind set on the mission. If time permits, I'll call my loved ones to let them know how things are going because it's seven hours later in Germany."

Andy then boards a bus along with other crew members and leaves the dorms for a daily briefing. Then its on to NATO operations where they do last minute checks and receive any additional information.

"After that, we start making our way to the jet," he said, and "perform our systems checks. As for me, I will check my oxygen mask, different settings and other emergency equipment." He also gets paperwork pertaining to the specific mission the crew will be performing that day.

"I get a game plan ready with my colleagues, so that when we take off, we already know what we're going to do," he said. "We also want to have an alternate plan in place in case of an emergency."

Then he begins to enter into a computer all the data specifically required for this mission. That entails aircraft that might be flying, other units involved in the mission, identification criteria and lots more.

"This is all in preparation before we get into the area of operation," he said. "It's important to make sure we have good communications so that we are ready to assume our duty. We'll usually assume responsibility for that airspace for six to eight hours, or however long we're tasked."

Identifying and detecting targets

Andy said AWACS crews are looking for aircraft that don't belong in that airspace, or aircraft that are "behaving in a suspicious manner, in order to prevent what happened on Sept. 11."

"In our area of responsibility, we try to detect all the targets and identify them," he said. "Once we identify the targets, we pass that information on to other units or platforms involved, most importantly to the technical director on the ground because he needs that information to assess the situation.

For the first time European NATO countries have the opportunity to come to this country aboard NATO E-3 AWACS planes to support America. Andy, a 28-year-old technical sergeant from Germany, gathers surveillance aboard one of five NATO airplanes stationed at Tinker Air Force Base, Okla., to assist with Operation Noble Eagle. (Photo by Mr. Darren Heusel)

"In the event we can't identify or track a target, we will go to the ground and have it identified. It's all a process of finding out if there's anybody in the area that's not supposed to be there and take the appropriate action if that happens."

Normally, Andy and the other controllers will get a break during the flight, which he says "is quite necessary actually. We're like civilian controllers in that you don't want to sit behind a screen for too long," he said. "It's a matter of maintaining alertness and consciousness."

Hard work

During his break, Andy tries to relax and take his mind off things for a while. "Some guys try to nap, but I find it hard," he said. "I might prepare some coffee or tea, eat a little bit or read a good book."

Before being relieved in the area of operation, Andy said he prepares a "passover briefing for the next gent."

"After that, we start heading back home, which is now Tinker Air Force Base," he said. "Sometimes, that can take hours. On the way back, we'll usually try to conduct a mission debrief — talk about lessons learned and things that went well — in order to enhance our performance every time."

Andy said the mission debriefs continue once the crew returns to NATO opperations, usually about 12 to 14 hours after takeoff. Finally, it's time to board the bus and head back to the dorms.

Andy said six to eight hours of flying is like double the time on the ground, because "the air is very dry and the situation is very intense."

"I don't have any problem falling asleep," he said. "If something really exciting happened during the flight, I might lie there and think about it for a while. Or, I might think about my relatives back home. But, usually, I'm out in a couple of minutes."

Earning their time off

When Andy isn't flying, he likes to stay active. One of his favorite hobbies is working-out. He also enjoys sports, especially tennis, "anything outdoors really."

"On my days off, I'll usually wake up around 8 o'clock, have something to drink, relax for a while and go to the gym for about three hours," he said. "After that, I might grab some lunch, go back to the dorm and find out if anybody's got anything planned for the day. If not, I might do my laundry, read a book or check my e-mails."

Shared comraderie

In the evening, Andy said he might grab a couple of buddies and go off base "for a drink and a laugh. The people here are very friendly and make me feel very welcome," he said. "I'm trying to get to know as many locals as possible, exchange thoughts really."

After a night out on the town, it's back to the dorms where Andy begins the same routine again.

"The one thing I'd like to leave here with if nothing else is to know I helped this great freedom-loving country of yours become more safe and secure and that I helped prevent any more of these brutal attacks from happening," he said.

"I also want the American people to know that we, NATO, stand side-by-side with them. Everything else is secondary."

— Mr. Darren Heusel, OC-ALC/PA.

Editors note: For security reasons only the crewman's first name is used.

Air Force gains team members on the field

For the third year in a row, the Air Force and Green Bay Packers recently joined forces to salute veterans and Air Force members at Lambeau Field, the Packers home stadium.

Recruiters from the 347th Recruiting Squadron posted the colors before the game, while Senior Master Sgt. Butch Gray, a soloist from the Air Force Band of Mid-America, performed the national anthem. To top off the pre-game festivities, a KC-135 Stratotanker from the 128th Air Refueling Wing, an air national guard unit stationed in Milwaukee, Wis., rumbled low and slow over the stadium. The crowd erupted in applause.

Honor not lost on recruits

Then the Packers took center stage, slowly gaining ground on the Minnesota Vikings. Nearly 150 members of northeast Wisconsin delayed enlistment program corps watched from the sidelines, awaiting the opportunity to take the field.

"It's an absolutely moving experience to walk out onto Lambeau Field with other people that made the same decision I did," said Mr. Ben Follmer, a senior at Beaver Dam High School in central Wisconsin. "Many Air Force people worked together to pull off such a great event. I can't wait to join their team."

Maj. Gen. (Ret.) Todd Stewart, a Wisconsin native, administered the oath of enlistment to 150 members of northeast Wisconsin delayed enlistment program corps at Lambeau Field.

Maj. Gen. Todd Stewart, retired Air Force Material Command director of plans and programs and a Wisconsin native, administered the oath. He explained to the young men and women what a momentous step enlisting in the "world's best Air Force" would be. He then appealed to the crowd's patriotism with a few words about the current campaign to abolish global terrorism.

"It's unfortunate, but we are at war," Gen. Stewart said. "But, I think Mr.Vince Lombardi said it best 'Winning isn't everything, it's the only thing.'"

A moving tribute

Afterward the general administered the oath and the newly enlisted Air Force members walked off the field to the crowd chanting "U-S-A, U-S-A."

"I can't begin to express the raw emotions I still have after standing on Lambeau Field with members of our squadron, 150 young Wisconsin men and women and Maj. Gen Stewart; and hearing more than 60,000 Americans yelling U-S-A, U-S-A, U-S-A," said Lt. Col. Paul Bigelow, 347th RCS commander. "That patriotic outpouring from a generous country will stay with me for a lifetime."

— SSgt. Eric Petosky, 347th RCS/PA

Edwards opens first 'children's only' library

The 95th Services Division at Edwards Air Force Base, Calif., recently opened the doors on their new library dedicated solely to children — a first for the Air Force.

In keeping with the history of benchmarks at Edwards, the new children's library is the first of its kind in the Air Force, according to Mr. Dick Michels, 95th Services Combat Support flight chief. "While other base libraries have sections for children, this is the first facility completely dedicated to children."

Eye-catching colors

The walls are painted in bright colors, with one covered floor-to-ceiling with a mural depicting children reading and playing. There are lower bookshelves, small tables and chairs, tiny desks for the computer stations — painted in bold primary colors — and geometric rugs throughout. There is also increased study space, a video viewing area, and three internet-connected computer systems.

Support for the young

The children's library is geared mainly towards children from birth to twelve years of age, with more than 7,000 books available at a variety of reading levels. One thousand of those books were purchased just before the facility's grand opening, and the rest of the collection is in good condition, according to Ms. Tatiana Belobratova, head base librarian.

In addition to housing children's literature, this new facility will hold events just for children. Currently, library staff and volunteers hold a weekly story hour. Ms. Belobratova anticipates expanding the event schedule to include guest speakers, movie showings, holiday parties and a summer reading program that will reward children for the number of books they read. "It will be a great time for kids," she said.

The big day

A number of Edwards' families turned out for the grand opening and ribbon cutting ceremony, which included demonstrations, refreshments, giveaways and games geared toward children. Children were reading with parents, signing up for library cards, inspecting the new computers, tossing beanbags or enjoying a round of plastic mini-golf, eating cookies and cake and listening to holiday music.

Proposed family center

This new facility, formerly known as the library annex, has been planned for a few years. It is incorporated into the complex that currently houses the family fitness center, outdoor recreation and information, tickets, & travel. The children's library is one of the first new additions to what will be the family center. The plan is to eventually make this complex a "one-stop shopping center" of sorts, conveniently located near family housing, according to Mr. Michels. Future plans may yield a youth teen library in the same complex.

— Ms. Sandra Naffziger, 95th SPTG/SVK

Excited children enjoy opening day of the first children's library in the Air Force located at Edwards AFB, Calif. It is the first new addition to what will eventually be the family center complex, conveniently located near family housing. (Photo by Ms. Sandra Naffziger)

Endurance, perserverance keep Hill athlete competing

In an Ironman triathlon competition individual endurance and perseverance are put to the test. An average course consists of a 2.4-mile swim, 112-mile bike ride and a 26.2-mile run.

"The first triathlon was thought up by some Navy guys who wanted to see who was the toughest," said Staff Sgt. Robert Wieland, a cameraman in the 367th Training Support Squadron at Hill Air Force Base, Utah.

Trying harder

"It took them two days. There are professionals now who finish the event in about eight hours, and most people finish within 12 hours," he said.

Sgt. Wieland has competed in three Ironman triathlons in the past two years, including the world championship competition in Hawaii. "I finished the California Ironman competition in San Diego in nine hours and was 47th overall. I didn't do so well in Hawaii but I'm hoping to qualify again this year and improve."

He began competing in triathlons in 1994 when a U-2 pilot noticed his rigorous recreational style.

"I worked at Beale AFB, Calif. I rode my bike to work everyday, swam after work and ran during lunch," he said.

"My first triathlon I finished in the top 20 of more than 100 competitors. I came out of the water in last place but made up time in the bike and run. I decided to learn to swim so I could do better and raced the next month and placed in the top 10."

Training for competition requires motivated intensity. Sgt. Wieland usually trains alone swimming before work and running or biking during lunch.

Preparing for this year's competitions he swam 40,000 meters a month and biked 40,000 miles in nine months. A thousand hours of training and $3,000 of his money were invested in this year's competitions.

Sgt. Wieland trains on base for safety reasons. He spends more than 60 days a year on temporary duty and brings special cables with him that allow him to simulate distances in smaller pools. He also uses treadmills and stationary bikes when he has to.

However, he doesn't follow a special diet. "I eat what my wife makes for me," Sgt. Wieland said. "She keeps my diet in order."

Mentally challenging

"The Ironman competitions are an extension of the triathlon and I find the physical and mental challenge very rewarding," he said. "I represent the Air Force at competitions. They provide me the opportunity to compete and significantly backs me financially."

Over the years he's competed in the Armed Services Triathlon competition at Pt. Mugu Ventura Naval Air Station, Calif. The world championship competition, which attracts 1,200 international competitors, is comparable in prestige to the Olympic triathlon, which is actually about a quarter of the distance of the Ironman competitions.

An iron man competition may cover more than a hundred miles in total distance; shorter triathlons may cover less than half of that. Sgt. Wieland finished one such competition at Hill in October in under an hour.

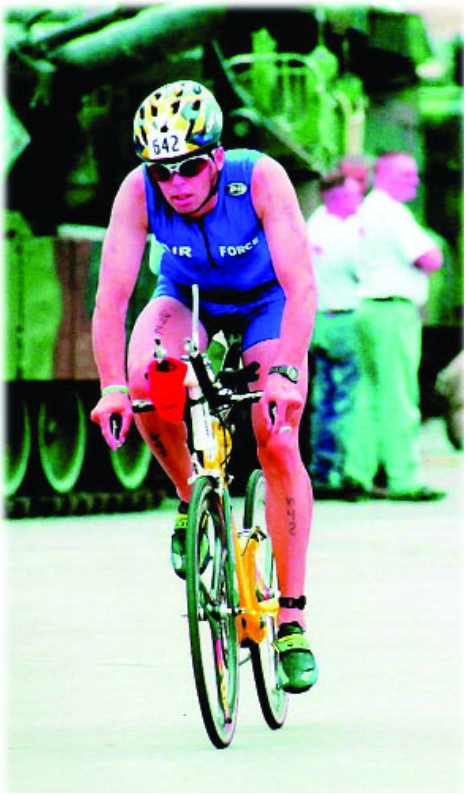
"The short races are pure speed where you go all out pushing yourself to the extreme," he said.

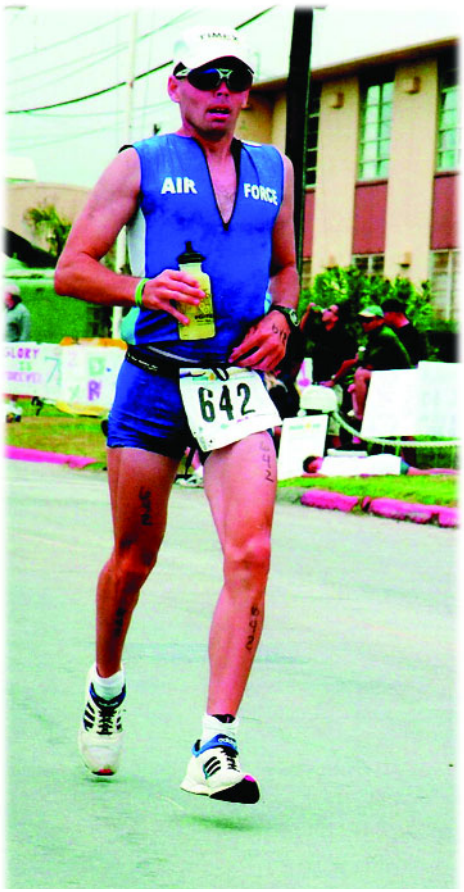
Family affair

His children want to put their endurance to the test, but will have to wait for a while. "My son, Nate, is 5 and my daughter, Emma, is 2. My wife Jenny runs a lot but we don't get to run together as much as we'd like because we have kids, though we do have a jogger stroller to take the youngsters along,"

"I try to train during hours that don't take time away from my family because they are more important to me than training," he said.

— Mr. Gary Boyle, OO-ALC Public Affairs





Staff Sgt. Robert Wieland, Hill AFB, Utah, competes in Ironman triathlons. An average competition consists of more than two miles swimming, more than a 100 miles of bicycle riding and more than 25 miles of running. (Courtesy photos)

'Birdwoman' of Brooks cares for base namesake

Christened "Sidney Brooks" in honor of the base's namesake, the baby white-tailed dove descended upon its human host peacefully from its 311th Human Systems office perch at Brooks Air Force Base, Texas.

Sidney instinctively coos in appreciation when responding to feeding calls from Ms. Deborah Stapleton, its adoptive mother who is a special program officer financial manager.

"The bird has to be fed every four hours," said Ms. Stapleton as she manipulates a liquid concoction into an eyedropper. Within seconds, the newest member of the SPO's growing aviary hops onto her lap for a tasty treat.

"I was walking back to the SPO building when I saw her on the ground in the parking lot. She was distressed and looked hungry. She must have been pushed out of the nest too soon," she said.

Lucky for the bird, it had been rescued by a lifelong friend of "all creatures great and small." She has been adopting animals since her youth. "I've always collected strays," admits Ms. Stapleton, who has followed the same "flight path" as SPO colleague Mr. Charles Laljer in caring for and feeding baby birds at work.

Mr. Laljer became known as the "Birdman of Brooks" a few years ago when he began feeding exotic baby birds. He and his wife Cyndi are exotic bird breeders.

"I talked to Charles. He examined the bird, and told me it is ready to become a fledgling," Ms. Stapleton said, providing her with instructions on caring for birds. "He showed me how to feed her. He really helped me out. I don't have much experience caring for birds."

A few years ago Ms. Stapleton rescued a pigeon hit on a road here. However, the bird died. Several years earlier at her home, she cared for a nest of baby sparrows that clogged up an outside vent to her clothes dryer. Both times, she "winged it" by fashioning her own bird-caring methods. This time, she got advice from several experts including the Wildlife Animal Rescue in Boerne which provided her with a baby bird formula.

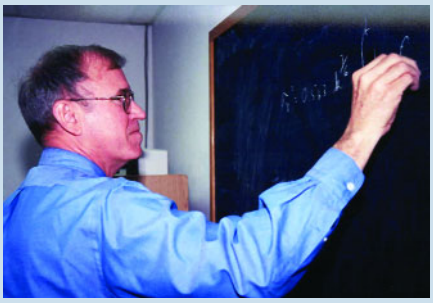
A veterinarian predicted the dove probably will not "fly the coop" when it gets its feathers. "He believes the bird thinks I'm its mama," she said. "My initial goal was to nurse it back to health, then release it."

Sidney may very well want to stay in his secure home. Most of the time, the bird cuddles up in a makeshift blanket situated atop a birdcage beneath Ms. Stapleton's desk. When the bird is older it will go to Ms. Stapleton's home.

"My husband Bob and I will keep her in a cage for safety outside. We'll keep the cage door open. If she doesn't adapt to the wild, she knows she has a home with us."

Ms. Stapleton doesn't believe she'll experience "empty nest syndrome" with Sidney. The bird is content in abiding by her mother's office rules. "I've designated the area as a 'no fly zone,'" she joked.

— Mr. Rudy Purificato, 311th HSW



AFRL Photo

Dr. R. Russell Butts

Research physicist gets top DOD civilian award

KIRTLAND AIR FORCE BASE, N.M.— A research physicist here was recently presented the Defense Department's highest civilian award.

Dr. R. Russell Butts, with the Air Force Research Laboratory's Directed Energy Directorate, received the Distinguished Civilian Service Award for his scientific work.

Dr. Butts led a research team that developed essential technologies to enhance America's missile defense capabilities. He directed his team's work on laser beam control capabilities for the Airborne Laser, a jumbo jet that will use a high-power laser to destroy ballistic missiles in their boost phase.

The award is the highest given to career civilian employees by the Secretary of Defense for exceptional duty and extremely significant contributions in science, technology or administrative fields within DOD.

— Information provided by AFRL Public Affairs

F-16 SPO recognized with Team Excellence award

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — The Improved Avionics Intermediate Shop team from the F-16 System Program Office here, recently won the Air Force 2001 Chief of Staff Team Excellence Award. The award recognizes outstanding performance of Air Force personnel working together in a team environment.

Members of the winning team are: Ms. Susan Lucchetta, program manager; Mr. Dave Scott, deputy program manager, and Mr. Rick Schikora, previous deputy program manager. Also receiving the award were Command Master Sgt. Chuck Kochel, Air Combat Command's F-16/F-117 avionics manager; Mr. Dennis Lanagan, sustainment program manager at Ogden ALC, Utah; and Mr. Rudy Peart, Ogden technical integrator.

Gen. Robert H. Fogelsong, Vice Chief of Staff of the Air Force, presented trophies to the individuals and team award recipients in Washington, D.C. in December.

The team modified the Air Force's battlefield proven, man-portable test system with an open architecture design to facilitate avionics repair of any aerospace expeditionary force weapon system. Since 1998, the team cut the test equipment cost by 40 percent, and developed a depot and school-house version for 60 percent less than the original cost. The team also implemented a streamlined acquisition strategy cutting contract time from eight months to less than two weeks.

— Information provided by ASC Public Affairs

Royal Saudi Air Force officer honored at Tinker

TINKER AIR FORCE BASE, Okla. — Royal Saudi Air Force Liaison Officer Capt. Ahmed Al-Wadie received the United States Air Force Commendation Medal Nov. 26 from Brig. Gen. Loren Reno, vice commander of Oklahoma City Air Logistics Center, Okla.

While assigned to the International Logistics Division, Propulsion Directorate at Kelly Air Force Base Texas, Capt. Al-Wadie was recognized for his direct involvement during Operation Allied Force in the release of Royal Saudi Air Force F100-PW-229 engine modules in support of the mission at Lakenheath Air Base, England, in December 1998.

He was responsible for more than 39 of Saudi Air Force F100-PW-220/229 engine module and component repairs under the Foreign Military Sales program.

Capt. Al-Wadie is the Oklahoma City Air Logistics Center's Royal Saudi Air Force Liaison Officer.

— Information provided by OC-ALC Public Affairs

Five scientists, engineers inducted as AFRL Fellows

WRIGHT-PATTERSON AFB, Ohio — Air Force Research Laboratory recently recognized five scientist and engineers as fellows. The award confers a lifetime status, recognizing outstanding contributions in research and development and exceptional technical program management.

Inducted during a ceremony at the Air Force Museum here Jan. 31 were: — Mr. Gordon Hager, directed energy directorate, Kirtland AFB, N.M; Mr. Dean Kocian, human effectiveness directorate, Wright-Patt; Ms. Ruth Pacher, materials and manufacturing directorate, Wright-Patt; Mr. Stephen Price, space vehicles directorate, Hanscom AFB, Mass; Mr. Harold Weinstock, Air Force Office of Scientific Research, Arlington, Va..

— Information provided by AFRL Public Affairs

Governor presents environmental award to Kirtland

KIRTLAND AIR FORCE BASE, N.M. — Kirtland received the State of New Mexico's Green Zia Environmental Excellence Program award for the second year.

The program is one of public recognition and technical assistance. It acknowledges and supports businesses or organizations with a vision and desire to move toward environmental excellence and long-term environmental and economic sustainability.

Col. Steven Bower, 377th Air Base Wing vice commander, accepted the award from Gov. Gary Johnson at an awards luncheon in October.

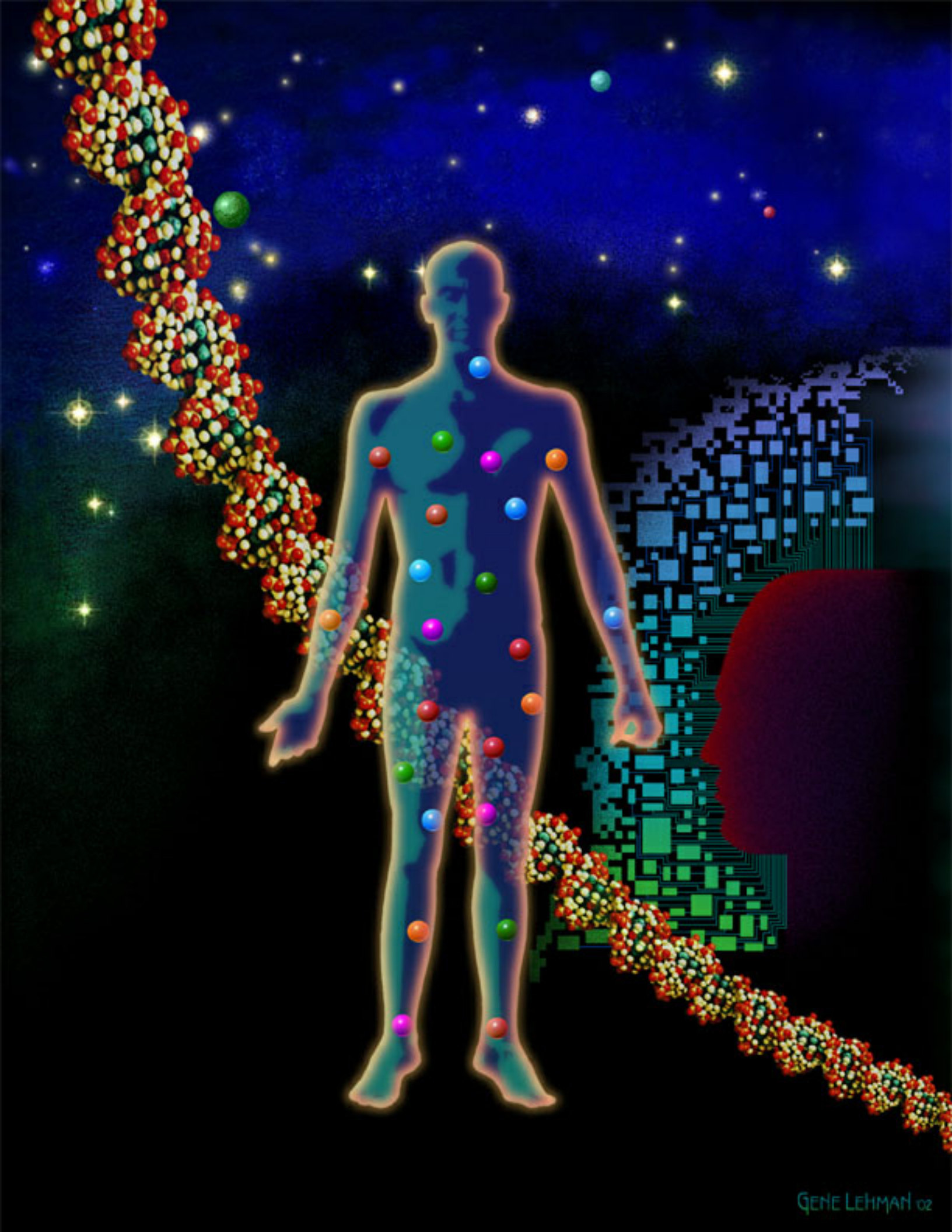
— Information provided by 377th ABW Public Affairs

Eglin wastewater plant receives recognition award

The Auxiliary Field 3 Wastewater Treatment Facility here received the 2001 Excellence Award for their outstanding wastewater treatment from the Florida Department of Environmental Protection in Tallahassee.

The award was accepted by Mr. William Proffitt, range maintenance division chief, Mr. William Pelt, West Range supervisor, and Mr. Dennis Ebel, lead operator and section foreman of water and wastewater.

— Information provided by AAC Public Affairs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